UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,292	02/03/2000	Michael A. Marino JR.	CASPR-004A	7318

27547 7590 08/27/2002

MURPHEY & MURPHEY, A.P.C.
701 PALOMAR AIRPORT DRIVE, SUITE 260
CARLSBAD, CA 92009

EXAMINER
BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 08/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/497,292	Applicant(s) MARINO, JR.
	Examiner Kevin M. Burd	Art Unit 2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 11, 2002* .

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *40-64* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *40-64* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *Jun 11, 2002* is/are a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This office action, in response to the argument filed 6/11/2002, is a final office action.

Response to Arguments

2. The objection to the drawings has been withdrawn.

3. Applicant's arguments filed 6/11/2002 have been fully considered but they are not persuasive.

Applicant states in page 5 of the remarks in discussing the rejection over Clough, "Figure 1, item 5 is merely labeled 'A/D'. Nowhere in the Abstract, Specifications, or the Claims is the word 'digitize' used, mentioned or even implied." An "A/D" converter is an analog to digital converter. This converter receives an analog signal and outputs a digital representation of the analog signal. Therefore, an "A/D" digitizes the signal.

Applicant states in page 5 of the remarks, "nowhere in the Abstract, specifications or claims is the word 'synchronized' used, mentioned or even implied." The term synchronized is not stated in the reference. However, the function of synchronizing the two signals is disclosed. As stated in the previous rejection, the noise components of the signals are correlated (column 4, lines 1-5) so they occur at the

same time. The definition of "synchronize" according to Merriam Webster's Collegiate Dictionary, tenth addition, is "to happen at the same time." A copy of this reference and the definitions it provides is available upon request.

Applicant states in pages 6 and 7 of the remarks, "more shocking is the examiner's use of the word 'subtractor' in his reference to item 12. The inventors define item 12 as'...summing circuit...' (Column 3, line 29) and (column 7, line 14). Nowhere in the entire Clough patent is there a 'subtractor 12' or any item termed a 'subtractor'. The examiner, respectfully disagrees. In column 8, lines, 12 and 13, Clough states "Apparatus according to claim 5, and comprising means (12) for subtracting computed signal samples...". Clough clearly discloses a subtractor 12.

Applicant states in pages 7-9 of the remarks, a citation of paragraph 3 of the latest office action. The cited paragraph, which is restated in the remarks, is not found in the previous office action filed 3/29/2002.

Applicant states in page 9 of the remarks, "while Clough and Chang and others direct their inventions to cancel audio signals, that are typically in the range of 20Hz to 20,000 Hz, Applicant's invention is used to cancel RF signals that typically are in the range of several million Hz to several billion Hz. According to the McGraw Hill Dictionary of Scientific and Technical Terms, Second Edition, the acoustic spectrum range is approximately zero to at least 1 megahertz. Acoustics is the science of the production, transmission and effects of sound. The RF range of frequencies is roughly

from 10 kilohertz to 100 gigahertz. The frequency ranges overlap and, therefore, the acoustic receivers are capable of receiving certain RF transmissions.

Applicant states in pages 9 and 10 of the remarks, "The examiner fails to understand, again, that just because two receivers receive the same signal, they are not synchronized unless it says they are synchronized. In addition, neither the words 'synchronize' or 'demodulate' appear anywhere in Chang. Chang has no relevance to Applicant's invention." The term synchronized is not stated in the reference. However, the function of synchronizing the two signals is disclosed. As stated in the previous rejection, the noise components of the signals are correlated (column 4, lines 1-5) so they occur at the same time. The definition of "synchronize" according to Merriam Webster's Collegiate Dictionary, tenth addition, is "to happen at the same time." A copy of this reference and the definitions it provides is available upon request.. The discussion about the act of demodulating is discussed on pages 4-5 and 8-9 of the previous office action and is restated below in the rejections of the claims. As to the statement Chang has no relevance to Applicant's invention, the examiner, respectfully disagrees. Please see the rejections of the claims under 35 U.S.C. 103(a) as being unpatentable over Chang stated in the previous office action.

Applicant states in page 10 of the remarks, "Chang deals with only a very limited frequency range, 3,000 Hz". This is merely an example of the frequency range and the

number of filters for the range example also varies in number. See column 5, lines 46-56.

Applicant states in pages 10 and 11 of his remarks, "If it were so obvious, they why did the U.S. Patent Office allow Chang to issue in light of the already issued patent to Clough?". Applicant goes on to say, "And, the Examiner has not given any reason why this obviousness was present in 1983 and 1988, the respective filing dates (hence the 'at the time of the invention') of the Clough and Chang patent applications. Without anything more, such rejections cannot be upheld." Clough et al (US 4,672,674) and Chang (US 4,912,767) are issued United States Patents and satisfy the criteria for the rejections of the claims under 35 U.S.C. 103(a). No more discussion is necessary.

Applicant states in pages 11 and 12 of the remarks, "there is nothing in column 4, lines 44-56 that in any way state, mention suggest or imply that Chang discloses the receivers are synchronized. That is an absolute misstatement of fact and Applicant's counsel will not dignify it with an answer." The term synchronized is not stated in the reference. However, the function of synchronizing the two signals is disclosed. As stated in the previous rejection, the noise components of the signals are correlated (column 4, lines 44-56) so they occur at the same time. The definition of "synchronize" according to Merriam Webster's Collegiate Dictionary, tenth addition, is "to happen at the same time." A copy of this reference and the definitions it provides is available upon request.

Applicant states in page 13 of the remarks, "Chang is a joke of a patent." Applicant further states, "Chang should never have been issued by the U.S. patent Office because it violates 35 U.S.C. 112 in such an egregious way as to be totally useless as a patent and prior art reference." The examiner, respectfully, disagrees. Chang (US 4,912,767) is an issued United States Patents and satisfy the criteria for the rejections of the claims under 35 U.S.C. 103(a). No more discussion is necessary.

Applicant states, in pages 13 and 14 of the remarks discussing the rejection over Mesecher, "Applicant's patent application and its claims apply to ambient signal regardless of where the ambient sources are located, regardless of how many ambient signals there are, regardless of how often the source locations change, and regardless of whether the same interfering signal arrives from one or multiple paths." In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the claims apply to ambient signal regardless of where the ambient sources are located, regardless of how many ambient signals there are, regardless of how often the source locations change, and regardless of whether the same interfering signal arrives from one or multiple paths) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In addition, applicant states the ambient signal are removed using correlation

techniques and not by subtracting. Column 10, lines 8-10 require the signals to be synchronized before the subtraction can be made. Therefore, the act of synchronizing and subtracting is the step of removing the ambient signals.

Applicant states, in pages 14 and 15 of the remarks, "the examiner has not shown Mesecher will work if the incoming signals are digitized prior to subtraction taking place." As stated in the previous office action, Mesecher does not disclose the received signals are digitized prior to the subtraction taking place. In figure 5, Mesecher shows the subtraction takes place then the signal is converted to a digital signal. The signal must be converted to a digital signal before being input to the modem for processing and for final transmission. It would have been obvious for one of ordinary skill in the art at the time of the invention to digitize the signal at any point prior to being input to the modem so the signal would be in proper format for the processing and storage in the modem to take place as well as simplifying the circuitry required for the subtraction to take place in the interference canceler.

The rejections of the claims are maintained and the rejections from the previous office action are restated below.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 40-56, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough et al (US 4,672,674).

Regarding claims 40, 43 and 54-56, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals. The system comprises a first receiver operative to receive both noise and voice data (column 4 lines 12-14). The first receiver digitizes (figure 1 item 5) the voice data and noise signals. A second receiver operative to receive primarily the noise signals (column 4 lines 14-15). The sampled voice data and noise signals are stored in a storage means for storing the samples from both the first and second receivers (column 3 lines 36-37). The receivers are synchronized to one another since the two signals being obtained have the noise components being correlated (column 4 lines 1-5). The definition of synchronization is having events occur at the same time. These noise components are correlated so they occur at the same time. This allows the subtractor 12 and an adaptive filtering means to suppress the noise signals in order to extract the voice data (figure 1 and column 3 lines 31-45 and 53-57) and to yield an output signal having an enhanced signal to noise ratio (column 7, lines 53-57).

Clough discloses in the abstract, the first receiver is arranged to be close to the mouth of the user and the second receiver will be spaced apart by a distance of one up

to ten cms. Clough does not specifically state what the term "close to the mouth of a user for reception of speech" but it is presumed the distance will be roughly one cm. Therefore, the distance between the microphones will be ten times the distance between the first microphone and the user.

Although Clough does not discloses receiving radiated emissions and ambient signals, Clough does disclose receiving a desired signal (the information signal) and an interfering signal (noise signal), receiving a interfering signal (noise signal) and subtracting the signals to recover the desired signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize this method of cancellation in any application that required the elimination of interfering signals to allow for the recovery of the desired signal.

Interference cancellation in Clough and the claimed invention take place at baseband. A demodulator is necessary in the claimed invention to get the received signal down to baseband. In Clough, it is not. The received signal of Clough is already at baseband. It would have been obvious for one of ordinary skill in the art at the time of the invention to use components available to ensure the input signal is a baseband signal when interference cancellation is to take place so the interference canceler will operate properly. A demodulator is one of those elements.

Regarding claim 41, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough

further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6).

Regarding claim 42, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6). Clough does not disclose converting the received signals into a corresponding electrical current. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to convert the received signals into a corresponding electrical current. By converting the signals into electrical current, only a minimal loss of signal strength would occur to the signal while traveling along the electrical conducting cable link as compared to a greater loss in voltage form do to the resistance of the wire.

Regarding claims 44 and 45, Clough further discloses the microphones are coupled to the analog to digital converters (A/D) by and electrical conducting means (figure 1).

Regarding claim 46, Clough discloses the two microphones can be arranged in one boom arm (column 3 lines 62-64).

Regarding claims 47-49, 52, 53, 63 and 64, Clough discloses the A/D converters sample the input samples at the same frequency and are therefore synchronized

(column 3 lines 14-19). It is inherent that clock signals must be transmitted to each of the A/D converters to maintain this synchronization.

Regarding claim 50, Clough discloses a plurality of microphones can be used to receive the noise signals (column 3 lines 48-52).

Regarding claim 51, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated in paragraph 3. Clough does not disclose the use of a plurality of microphones to receive the voice data and noise signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use a plurality of microphones to receive the voice data and noise signals. With more than one microphone, it is possible to receive a plurality of voice signals from more than one source and after the noise signal has been removed and with proper filtering, all of the voice signals can be recovered.

6. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough et al (US 4,672,674) in view of the instant applications admitted prior art.

Regarding claims 57-62, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough further discloses adaptive filtering is conducted to recover an audible signal (figure 1 and column 3 lines 39-45 and 53-57). However, Clough does not disclose which adaptive algorithm is used. "The two most common classes of adaptive filter

algorithms are Stochastic Gradient based algorithms and Least-square based algorithms" page 16 lines 21-23 of the instant application. It would have been obvious for one of ordinary skill in the art to use the most common types of adaptive algorithms in the adaptive filtering conducted by Clough since these types of algorithms are the most widely used.

7. Claims 40-56, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 4,912,767).

Regarding claims 40, 41, 43 and 54-56, Chang discloses a system for suppressing noise signals from a signal containing both voice data and noise signals. The system comprises a first receiver operative to receive both noise and voice data (abstract) and a second receiver operative to receive primarily the noise signals (abstract). The first and second receiver are synchronized. Chang states the noise components of the received signals are correlated so they will occur at the same time (column 4, lines 44-50). The noise components will occur at the same time since any time differences will be compensated for (column 4, lines 51-56). An adaptive filtering means suppresses the noise signals in order to extract the voice data (figure 2 and abstract and column 6 lines 8-15). Chang discloses the noise signals and the voice data /noise signals inputs are received by microphones (column 5 lines 17-29) and the microphones are spaced apart some distance apart.

Although Chang does not discloses receiving radiated emissions and ambient signals, Chang does disclose receiving a desired signal (the information signal) and an interfering signal (noise signal), receiving a interfering signal (noise signal) and subtracting the signals to recover the desired signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize this method of cancellation in any application that required the elimination of interfering signals to allow for the recovery of the desired signal.

Chang does not disclose digitizing the received signals prior to the cancellation step. It would have been obvious for one of ordinary skill in the art at the time of the invention to digitize the received signals. The digitized signals are much easier to store. The stored data will provide a reference and allow the received data to be monitored at a later data to ensure proper reception had occurred.

Interference cancellation in Chang and the claimed invention take place at baseband. A demodulator is necessary in the claimed invention to get the received signal down to baseband. In Chang, it is not. The received signal of Chang is already at baseband. It would have been obvious for one of ordinary skill in the art at the time of the invention to use components available to ensure the input signal is a baseband signal when interference cancellation is to take place so the interference canceler will operate properly. A demodulator is one of those elements.

Regarding claim 42, Chang further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6). Chang does not disclose converting the received signals into a corresponding electrical current. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to convert the received signals into a corresponding electrical current. By converting the signals into electrical current, only a minimal loss of signal strength would occur to the signal while traveling along the electrical conducting cable link as compared to a greater loss in voltage form do to the resistance of the wire.

Regarding claims 44 and 45, Chang further discloses the microphones are coupled to the adaptive filters by and electrical conducting means (figure 2).

Regarding claim 46, Chang discloses the two microphones can be arranged on a pilot's face mask (column 5 lines 17-29).

Regarding claims 47-49, 52, 53, 63 and 64, Chang discloses the receivers are synchronized (column 4 lines 44-56). It is inherent that clock signals must be transmitted to each of the receivers to maintain this synchronization.

Regarding claims 50 and 51, Chang does not disclose the use of a plurality of microphones to receive the voice data and noise signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use a plurality of microphones to receive the voice data and noise signals. With more than one microphone, it is possible to receive a plurality of voice signals from more than one

source and after the noise signal has been removed and with proper filtering, all of the voice signals can be recovered.

8. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 4,912,767) in view of the instant applications admitted prior art.

Regarding claims 57-62, Chang discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated in paragraph 3. Chang further discloses adaptive filtering is conducted to recover an audible signal (figure 2). However, Chang does not disclose which adaptive algorithm is used. "The two most common classes of adaptive filter algorithms are Stochastic Gradient based algorithms and Least-square based algorithms" page 16 lines 21-23 of the instant application. It would have been obvious for one of ordinary skill in the art to use the most common types of adaptive algorithms in the adaptive filtering conducted by Chang since these types of algorithms are the most widely used.

9. Claims 40-53, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mesecher et al (US 6,289,004).

Regarding claims 40, 43-46, Mesecher discloses a system for suppressing interference signals from a desired signal. A first RF receiver receives a signal such that the only large signal received by the auxiliary antenna is the signal from the

interferer (column 3, line 65 to column 4, line 2). The main antenna receives the desired signal and a noise component of the interferer. Both antennas are located in the same apparatus as shown in figure 3B. The interferer signal is subtracted from the signal of the main antenna thereby deriving a signal substantially free from the interference source (column 4, lines 25-29). Figure 12 shows the received signal are input to RF receivers. The RF receivers will demodulate the data before inputting the signals to the interference canceler (column 9, lines 61-67). In addition, the received signals are required to be synchronized before subtraction can take place (column 10, lines 8-10). The result of the subtraction is processed and stored in the modem shown in figure 5.

Mesecher does not disclose the received signals are digitized prior to the subtraction taking place. In figure 5, Mesecher shows the subtraction takes place then the signal is converted to a digital signal. The signal must be converted to a digital signal before being input to the modem for processing and for final transmission. It would have been obvious for one of ordinary skill in the art at the time of the invention to digitize the signal at any point prior to being input to the modem so the signal would be in proper format for the processing and storage in the modem to take place as well as simplifying the circuitry required for the subtraction to take place in the interference canceler.

Regarding claims 41 and 42, Mesecher further discloses converting the received signals into a corresponding voltage (figure 12). Mesecher does not disclose converting the received signals into a corresponding electrical current. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to convert the received signals into a corresponding electrical current. By converting the signals into electrical current, only a minimal loss of signal strength would occur to the signal while traveling along the electrical conducting cable link as compared to a greater loss in voltage form do to the resistance of the wire.

Regarding claims 47-49, 52, 53, 63 and 64, Mesecher discloses the receivers are synchronized (column 10, lines 8-10). It is inherent that clock signals must be transmitted to each of the receivers to maintain this synchronization.

Regarding claims 50 and 51, Mesecher discloses in figure 3B the auxiliary antenna is capable of receiving numerous signals from the interferer to receive the most accurate representation of the interferer signal. The same principle can be used for the main antenna.

10. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mesecher et al (US 6.289.004) in view of the instant applications admitted prior art.

Regarding claims 57-62, Mesecher discloses a system for suppressing noise signals from a signal containing both a desired data signal and noise signals as stated

above. Mesecher further discloses adaptive filtering means is conducted to recover the desired data signal (figure 12). However, Mesecher does not disclose how this calculation is computed. "The two most common classes of adaptive filter algorithms are Stochastic Gradient based algorithms and Least-square based algorithms" page 16 lines 21-23 of the instant application. It would have been obvious for one of ordinary skill in the art to use the most common types of adaptive algorithms in the adaptive filtering conducted by Mesecher since these types of algorithms are the most widely used.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

12. **Any response to this final action should be mailed to:**

Box AF
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications; please mark "EXPEDITED PROCEDURE" or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 5:00 PM. The examiner can also be reached on alternate Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Kevin M. Burd
PATENT EXAMINER
August 26, 2002

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
8/26/02